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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,975	06/29/2001	Sung-Hoe Yoon	8733.467.00	6148
30827	7590	03/22/2004	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			MARKHAM, WESLEY D	
			ART UNIT	PAPER NUMBER

1762

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,975

Applicant(s)

YOON, SUNG-HOE

Examiner

Wesley D Markham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 1/5/2004, in which the specification of the instant application was amended, independent Claim 1 was amended, and Claims 2 and 6 were canceled. Claims 1, 3 – 5, and 7 – 9 are currently pending in U.S. Application Serial No. 09/893,975, and an Office Action on the merits follows.

Drawings

2. The formal drawings (3 sheets, 3 figures) filed by the applicant on 6/29/2001 are approved by the examiner.

Specification

3. The objection to the specification, set forth in paragraph 4 of the previous Office Action (i.e., the non-final Office Action, mailed on 10/6/2003), is withdrawn in light of the applicant's amendment to correct a typographical error.

Claim Objections

4. The objection to Claim 6, set forth in paragraph 5 of the previous Office Action, is withdrawn in light of the applicant's amendment in which Claim 6 was canceled.

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Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claim 3 depends from Claim 2. However, Claim 2 was canceled by the applicant in the most recent amendment filed on 1/5/2004. Therefore, Claim 3 depends from a canceled claim, which renders the scope of Claim 3 unclear and the claim vague and indefinite. For the purposes of examination only, the examiner has interpreted Claim 3 to depend from independent Claim 1 (i.e., instead of canceled Claim 2).

Claim Observations

8. The examiner notes that the rejections of (1) Claims 1 – 5 and 8 under 35 U.S.C. 102(b) as being anticipated by Yamanashi et al. (USPN 5,413,657), set forth in paragraph 12 of the previous Office Action, and (2) Claims 1, 4, 5, 8, and 9 under 35 U.S.C. 102(b) as being anticipated by Epson Corp (JP 01-244430 A), set forth in paragraph 14 of the previous Office Action, are withdrawn in light of the applicant's amendment in which independent Claim 1 was amended to require that the additive include dimethylsiloxane. This limitation is not taught by either Yamanashi et al. or Epson Corp.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 3 – 5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Chung et al. (USPN 5,995,184).
11. Regarding independent **Claim 1**, Chung et al. teaches a method of fabricating an optical film (e.g., an optical thin film compensator) (Abstract), the method comprising the steps of preparing a substrate (Figure 4, step “402”, Col.4, lines 5 – 8, and Col.6, lines 44 – 49), forming an alignment layer on the substrate (Figure 1, reference number “104”, Figure 4, step “404”, Col.4, lines 8 – 16, and Col.6, lines 50 – 54), rubbing the alignment layer (Col.6, lines 54 – 61), and forming a liquid crystal (LC) layer on the alignment layer, the LC layer including an additive (Figure 4, step “408”, Col.2, lines 58 – 64, Col.3, lines 4 – 10, Col.5, lines 1 – 50, Col.6, lines 25 – 42, and Col.7, lines 7 – 16). Chung et al. also teaches that the additive includes dimethylsiloxane, as required by Claim 1. Specifically, Chung et al. teaches that the additive can be a surfactant such as polydimethylsiloxane (PDMS) (Col.5, lines 31 – 32). In this case, the examiner has reasonably interpreted PDMS to be an additive that “includes dimethylsiloxane”, as claimed by the applicant. Further, Chung et al.

teaches that forming the liquid crystal layer comprises coating a liquid crystal including the additive and curing / crosslinking (i.e., "plasticizing") the liquid crystal on the substrate (Figure 4, steps "410" and "412", Col.3, lines 4 – 10, Col.4, lines 43 – 46, and Col.7, lines 18 – 44). Chung et al. also teaches that the additive (i.e., the surfactant) is spontaneously disposed in an interface between the liquid crystal layer and air when forming the liquid crystal layer on the alignment layer (Abstract, Col.3, lines 4 – 10, and Col.4, lines 30 – 35). Chung et al. also teaches that the additive is a "non-reactive" surfactant (Col.5, lines 17 – 23). This is equivalent to stating that the additive does not react with the liquid crystal during the plasticizing of the liquid crystal, as claimed by the applicant. In the alternative to this reasoning, the additive of Chung et al. (i.e., a polydimethylsiloxane surfactant) is equivalent to the applicant's claimed additive (i.e., an additive including dimethylsiloxane), and the liquid crystal curing / plasticizing process taught by Chung et al. is equivalent to the applicant's claimed liquid crystal plasticizing process. Therefore, the polydimethylsiloxane additive of Chung et al. would have inherently not reacted with the liquid crystal during the plasticizing process. Regarding **Claim 3**, Chung et al. also teaches that plasticizing the LC including the additive on the substrate uses one of UV rays or heat (Figure 4, steps "410" and "412", Col.3, lines 4 – 10, Col.4, lines 43 – 46, and Col.7, lines 18 – 44). Regarding **Claim 4**, Chung et al. also teaches that the additive is a surfactant (Col.2, lines 63 – 67, Col.3, lines 1 – 3, and Col.5, lines 15 – 33). Regarding **Claim 5**, Chung et al. does not explicitly teach that the additive (i.e., the surfactant) has both a hydrophobic group and a hydrophilic group.

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However, Chung et al. does teach that the additives such as PDMS are surfactants (Col.5, lines 15 – 31). In order to be classified as a “surfactant”, a material must necessarily have both a hydrophobic group and a hydrophilic group (see, for example, Col.5, lines 59 – 62 of Brandon et al. (USPN 5,674,671), and/or Col.5, lines 10 – 15, of Rudnic et al. (USPN 5,987,876), both of which are simply cited to show that surfactants have both a hydrophobic group and a hydrophilic group). Therefore, since Chung et al. teaches that the additive is a surfactant, and surfactants necessarily have both a hydrophobic group and a hydrophilic group, Chung et al. inherently teaches that the additive has both a hydrophobic group and a hydrophilic group, as claimed by the applicant in Claim 5. Regarding **Claim 7**, Chung et al. also teaches that the LC layer is a cholesteric LC layer. Specifically, Chung et al. teaches that their method is utilized to produce cholesteric compensators (Abstract and Col.2, lines 46 – 52). Regarding **Claim 8**, Chung et al. also teaches that the LC layer is a nematic LC layer. Specifically, Chung et al. teaches that the compensator produced by their method has a “nematic / air interface” (Col.2, lines 55 – 57), which is equivalent to stating that the LC layer (i.e., the layer that has an interface with the air) is a “nematic” LC layer.

12. Claims 1, 3 – 5, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada (USPN 5,667,854).

13. Regarding independent **Claim 1**, Yamada teaches a method of fabricating an optical film (e.g., a rectangular optical compensatory sheet) (Abstract), the method

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comprising the steps of preparing a substrate (Col.6, lines 2 – 5, Col.7, line 15, and Col.17, lines 43 – 61), forming an alignment layer on the substrate (Col.7, lines 15 – 16, and Col.18, lines 30 – 42), rubbing the alignment layer (Col.3, lines 62 – 64, Col.7, lines 17 – 19, and Col.18, lines 39 – 42), and forming a liquid crystal (LC) layer on the alignment layer, the LC layer including an additive (Col.4, lines 20 – 28, Col.7, lines 18 – 21 and 56 – 62, Col.8, lines 36 – 43, Cols.9 – 10, Col.16, lines 49 – 59, and Col.17, lines 30 – 35). Yamada also teaches that forming the liquid crystal layer comprises coating a liquid crystal including the additive and curing / crosslinking (i.e., “plasticizing”) the liquid crystal on the substrate (Col.4, lines 29 – 31, Col.7, lines 22 – 33, Col.16, lines 37 – 48, and Col.17, lines 36 – 42). Further, Yamada teaches that the additive is a surfactant, particularly a surfactant having both a hydrophobic group and a hydrophilic group, more particularly an additive including a dimethylsiloxane surfactant (Col.8, lines 36 – 43, and Col.9, lines 35 – 42). Yamada does not explicitly teach that the additive is spontaneously disposed in an interface between the liquid crystal layer and air when forming the liquid crystal layer on the alignment layer, and that the additive does not react with the LC during the plasticizing of the LC. However, the surfactant taught by Yamada (i.e., a dimethylsiloxane surfactant having both a hydrophobic group and a hydrophilic group – see Col.9, lines 35 – 65) is identical to the applicant’s claimed and disclosed surfactant, and the liquid crystal curing / plasticizing process taught by Yamada is equivalent to the applicant’s claimed liquid crystal plasticizing process. Therefore, the dimethylsiloxane surfactant additive of Yamada would have inherently been

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spontaneously disposed in an interface between the liquid crystal layer and air when forming the liquid crystal layer on the alignment layer and would have inherently not reacted with the liquid crystal during the plasticizing process, as claimed by the applicant, unless essential process steps and/or limitations are missing from the applicant's claims. Regarding **Claim 3**, Yamada also teaches that plasticizing the LC including the additive on the substrate uses one of UV rays or heat (Col.4, lines 29 – 31, Col.7, lines 22 – 33, Col.16, lines 37 – 48, and Col.17, lines 36 – 42). Regarding **Claims 4 and 5**, Yamada also teaches that the additive is a surfactant having both a hydrophobic group and a hydrophilic group (see the dimethylsiloxane surfactants discussed and depicted on Cols. 9 – 10 of Yamada). Regarding **Claim 8**, Yamada also teaches that the LC layer is a nematic LC layer (Col.4, lines 13 and 32, Col.10, lines 58 – 59, and Col.16, lines 37 – 48).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. In the alternative to the reasoning presented above in paragraph 11, Claims 1, 3 – 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (USPN 5,995,184) in view of Yamada (USPN 5,667,854).

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16. Specifically, if the applicant intends to exclude PDMS from Claim 1 by reciting that the additive includes dimethylsiloxane (i.e., not polydimethylsiloxane), Chung et al. teaches all the limitations of **Claims 1, 3 – 5, 7, and 8** as set forth above in paragraph 11, except for a method wherein the additive (i.e., a surfactant having both a hydrophobic group and a hydrophilic group) includes dimethylsiloxane. However, Chung et al. does teach that the additive can be a non-reactive surfactant in general, and the specific surfactant utilized does not appear to be limited (Col.5, lines 15 – 32). An example of the classes of surfactants taught by Chung et al. is a non-reactive silicon oil surfactant (Col.5, line 22). Yamada teaches a similar method of forming an optical compensatory sheet in which a surfactant is included in the LC layer / composition (Abstract and Col.4, lines 22 – 28). Further, Yamada teaches that dimethylsiloxane can be utilized as the surfactant (Col.9, lines 35 – 42) and that the inclined angle of the LC compound on a surface side (air side) can be controlled by selecting the compound(s), such as the surfactant, employed together with the LC compound (Col.16, lines 49 – 57). Therefore, it would have been obvious to one of ordinary skill in the art to utilize dimethylsiloxane (as taught by Yamada) as the surfactant in the process of Chung et al. with the reasonable expectation of successfully and advantageously choosing and utilizing a specific, well-known surfactant (i.e., dimethylsiloxane) out of the broader genus of surfactants taught generally by Chung et al. One of ordinary skill in the art would have done so with the expectation that the objectives of Chung et al. (i.e., producing an optical compensator for improving the viewing angle and contrast of LCDs) would have

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been met, regardless of the exact surfactant utilized. Since the combination of Chung et al. and Yamada reasonably suggests utilizing dimethylsiloxane as the surfactant in the process, the limitation that the additive has both a hydrophobic group and a hydrophilic group is also met (i.e., because the dimethylsiloxane surfactants taught by Yamada have both a hydrophobic and a hydrophilic group). Additionally, the surfactant taught by the combination of Chung et al. and Yamada (i.e., a dimethylsiloxane surfactant having both a hydrophobic group and a hydrophilic group – see Col.9, lines 35 – 65) is identical to the applicant's claimed and disclosed surfactant, and the liquid crystal curing / plasticizing process taught by Chung et al. is equivalent to the applicant's claimed liquid crystal plasticizing process. Therefore, the dimethylsiloxane surfactant additive used in the process of the combination of Chung et al. and Yamada would have inherently not reacted with the liquid crystal during the plasticizing process, as claimed by the applicant.

17. Claims 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (USPN 5,995,184) in view of Scheuble et al. (USPN 5,308,535).

18. In the alternative to the reasoning / reference interpretation presented above in paragraph 11, Chung et al. teaches all the limitations of **Claims 7 – 9** as set forth above in paragraph 11, except for a method wherein the LC layer is a cholesteric LC layer (Claim 7), a nematic LC layer (Claim 8), or a smectic LC layer (Claim 9). However, it is the purpose of Chung et al. to produce a liquid crystalline optical compensator for improving the viewing angle and contrast of LC displays (Abstract).

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Scheuble et al. teaches that, in the art of producing a liquid crystalline optical compensator (i.e., a device analogous to that produced by Chung et al.), the LC layer(s) of the compensator can be either nematic, smectic, or cholesteric, depending on the particular application (i.e., end use) of the compensator (Col.13, lines 25 – 56). Therefore, it would have been obvious to one of ordinary skill in the art to utilize any one of nematic, smectic, or cholesteric LC polymers in the LC layer of the optical compensator of Chung et al. with the reasonable expectation of successfully and advantageously producing a compensator for improving the viewing angle and contrast of LC displays (i.e., achieving the objective of Chung et al.), regardless of the specific type / orientation of the LC material that it utilized. As taught by Scheuble et al., the specific type of LC material (i.e., nematic, smectic, or cholesteric) utilized in the process of Chung et al. would be determined by one of ordinary skill in the art based on the desired end-use of the optical compensator.

19. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (USPN 5,995,184) in view of Hanmer et al. (WO 98/00475 A1).

20. In the alternative to the reasoning / reference interpretation presented above in paragraph 11, Chung et al. teaches all the limitations of **Claims 8 and 9** as set forth above in paragraph 11, except for a method wherein the LC layer is a nematic LC layer (Claim 8) or a smectic LC layer (Claim 9). However, it is the purpose of Chung et al. to produce a liquid crystalline optical compensator for improving the viewing angle and contrast of LC displays (Abstract). Hanmer et al. teaches a similar method

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of producing a liquid crystal compensation film (Abstract). Hanmer et al. also teaches that, in a preferred embodiment, the polymerizable mesogenic material (i.e., the polymerizable LC material) exhibits nematic or smectic phases, most preferably the smectic phase because alignment is less easily disturbed prior to curing (page 11, lines 14 – 19). Therefore, it would have been obvious to one of ordinary skill in the art to utilize either nematic or smectic polymerizable mesogens (i.e., LC materials) in the LC layer of the optical compensator of Chung et al. with the reasonable expectation of successfully and advantageously producing a compensator for improving the viewing angle and contrast of LC displays (i.e., achieving the objective of Chung et al.), regardless of the specific type / orientation of the LC material that it utilized. Further and regarding Claim 9, an additional motivation to utilize a polymerizable smectic LC material in the process of Chung et al. is that such a material advantageously provides alignment that is less easily disturbed prior to curing.

21. Claims 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (USPN 5,995,184) in view of Yamada (USPN 5,667,854), in further view of Scheuble et al. (USPN 5,308,535).

22. In the alternative to the reasoning / reference interpretation presented above, the combination of Chung et al. and Yamada teaches all the limitations of **Claims 7 – 9** as set forth above in paragraph 16, except for a method wherein the LC layer is a cholesteric LC layer (Claim 7), a nematic LC layer (Claim 8), or a smectic LC layer

(Claim 9). However, it is the purpose of Chung et al. to produce a liquid crystalline optical compensator for improving the viewing angle and contrast of LC displays (Abstract). Scheuble et al. teaches that, in the art of producing a liquid crystalline optical compensator (i.e., a device analogous to that produced by Chung et al.), the LC layer(s) of the compensator can be either nematic, smectic, or cholesteric, depending on the particular application (i.e., end use) of the compensator (Col.13, lines 25 – 56). Therefore, it would have been obvious to one of ordinary skill in the art to utilize any one of nematic, smectic, or cholesteric LC polymers in the LC layer of the optical compensator of Chung et al. with the reasonable expectation of successfully and advantageously producing a compensator for improving the viewing angle and contrast of LC displays (i.e., achieving the objective of Chung et al.), regardless of the specific type / orientation of the LC material that it utilized. As taught by Scheuble et al., the specific type of LC material (i.e., nematic, smectic, or cholesteric) utilized in the process of Chung et al. would be determined by one of ordinary skill in the art based on the desired end-use of the optical compensator.

23. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (USPN 5,995,184) in view of Yamada (USPN 5,667,854), in further view of Hanmer et al. (WO 98/00475 A1).

24. In the alternative to the reasoning / reference interpretation presented above, the combination of Chung et al. and Yamada teaches all the limitations of **Claims 8 and 9** as set forth above in paragraph 16, except for a method wherein the LC layer is a

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nematic LC layer (Claim 8) or a smectic LC layer (Claim 9). However, it is the purpose of Chung et al. to produce a liquid crystalline optical compensator for improving the viewing angle and contrast of LC displays (Abstract). Hanmer et al. teaches a similar method of producing a liquid crystal compensation film (Abstract). Hanmer et al. also teaches that, in a preferred embodiment, the polymerizable mesogenic material (i.e., the polymerizable LC material) exhibits nematic or smectic phases, most preferably the smectic phase because alignment is less easily disturbed prior to curing (page 11, lines 14 – 19). Therefore, it would have been obvious to one of ordinary skill in the art to utilize either nematic or smectic polymerizable mesogens (i.e., LC materials) in the LC layer of the optical compensator of Chung et al. with the reasonable expectation of successfully and advantageously producing a compensator for improving the viewing angle and contrast of LC displays (i.e., achieving the objective of Chung et al.), regardless of the specific type / orientation of the LC material that it utilized. Further and regarding Claim 9, an additional motivation to utilize a polymerizable smectic LC material in the process of Chung et al. is that such a material advantageously provides alignment that is less easily disturbed prior to curing.

25. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada (USPN 5,667,854) in view of Scheuble et al. (USPN 5,308,535).

26. Yamada teaches all the limitations of **Claims 7 and 9** as set forth above in paragraph 13, except for a method wherein the LC layer is a cholesteric LC layer

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(Claim 7) or a smectic LC layer (Claim 9). Specifically, Yamada teaches a nematic LC layer (Col.4, lines 13 and 32, Col.10, lines 58 – 59, and Col.16, lines 37 – 48). However, the LC material used in the process of Yamada does not appear to be particularly limited (Col.7, lines 56 – 60). Scheuble et al. teaches that, in the art of producing a liquid crystalline optical compensator (i.e., a device analogous to that produced by Yamada), the LC layer(s) of the compensator can be either nematic, smectic, or cholesteric, depending on the particular application (i.e., end use) of the compensator (Col.13, lines 25 – 56). Therefore, it would have been obvious to one of ordinary skill in the art to utilize either a smectic or a cholesteric LC material as opposed to a nematic LC material in the LC layer of the optical compensator of Yamada with the reasonable expectation of successfully and advantageously producing a compensator that improves the viewing angle characteristics of LC displays (i.e., achieving the objective of Yamada), regardless of the specific type / orientation of the LC material that it utilized. As taught by Scheuble et al., the specific type of LC material (i.e., nematic, smectic, or cholesteric) utilized in the process of Yamada would be determined by one of ordinary skill in the art based on the desired end-use of the optical compensator.

27. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada (USPN 5,667,854) in view of Hanmer et al. (WO 98/00475 A1).

28. Yamada teaches all the limitations of **Claim 9** as set forth above in paragraph 13, except for a method wherein the LC layer is a smectic LC layer. Specifically,

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Yamada teaches a nematic LC layer (Col.4, lines 13 and 32, Col.10, lines 58 – 59, and Col.16, lines 37 – 48). However, the LC material used in the process of Yamada does not appear to be particularly limited (Col.7, lines 56 – 60). Hanmer et al. teaches a similar method of producing a liquid crystal compensation film (Abstract). Hanmer et al. also teaches that, in a preferred embodiment, the polymerizable mesogenic material (i.e., the LC material) exhibits nematic or smectic phases, most preferably the smectic phase because alignment is less easily disturbed prior to curing (page 11, lines 14 – 19). Therefore, it would have been obvious to one of ordinary skill in the art to utilize a smectic LC material in the LC layer of the optical compensator of Yamada instead of a nematic LC material with the reasonable expectation of successfully and advantageously producing a compensator that improves the viewing angle characteristics of LC displays (i.e., achieving the objective of Yamada), as well as providing the additional advantage of producing an alignment that is less easily disturbed prior to curing.

Response to Arguments

29. Applicant's arguments filed on 1/5/2004 have been fully considered but they are not persuasive.

30. Specifically, the applicant argues that none of the cited references, alone or in combination, teaches or suggests the newly added features of the claimed invention, specifically that the additive includes dimethylsiloxane, forming the LC layer includes coating the LC including the additive and plasticizing the LC layer on the substrate,

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that the additive is spontaneously disposed in an interface between the LC layer and air when forming the LC layer on the alignment layer, and that the additive does not react with the LC during the plasticizing of the LC. In response, the examiner has clearly shown that both Chung et al. and Yamada (alone and in combination) teach and/or suggest each and every limitation of the applicant's claims, including the newly added limitations discussed by the applicant (for further detail, please see the 35 U.S.C. 102 and 103 sections in paragraphs 9 – 28 above). Therefore, the applicant's arguments are not persuasive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



WDM

Wesley D Markham
Examiner
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MICHAEL BARR
PRIMARY EXAMINER